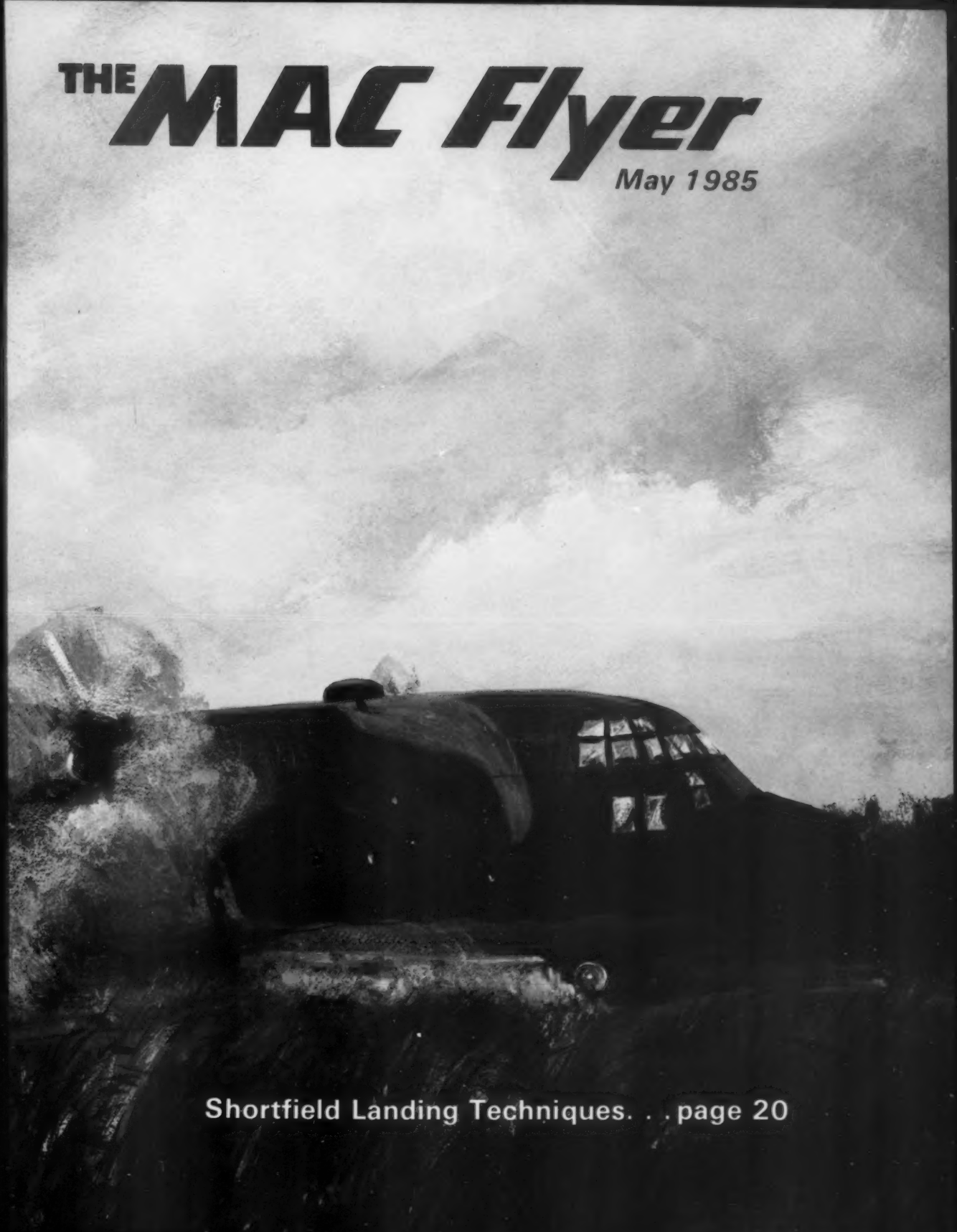
THE MAC Flyer

May 1985



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THE MAC Flyer

For Greater Safety in MAC Air Operations

MAY 1985 MACRP 127-5 VOL XXXII NO. 5

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Colonel John G. Stephen, USAF
Director of Safety

A Parting Observation

As it does for all of us, the time has come to hang up my blue suit and move on. And as I look back over my 31 years in the Air Force, my two year tenure as MAC Director of Safety has been one of the most challenging and rewarding assignments of my career.

I found especially gratifying the leadership provided by CINCMAC, the Inspector General and other key members of the MAC Staff in ensuring that MAC's safety program is second to none. Unit commanders and supervisors have demonstrated the importance of the safety program by assigning highly qualified personnel to their safety staffs. Quality people are important because their job is to advise the commander on the safest way to accomplish the mission.

The command's superb safety record is a direct indication on how well we are doing. The real key to the success of any program, though, is the individual working "on the line." I visited all the major units in MAC and many of the smaller ones. A common thread I observed was a spirit of total dedication and professionalism of the people "in the trenches." These people—the aircrews, maintenance and transportation personnel, the security police, and all the other support personnel—are the key to the successful accomplishment of MAC's mission. Their superb efforts reflect the effectiveness of our safety program. Although every assignment I had in the Air Force was enjoyable, my time "in the trenches" moving airplanes was the best. I salute the airplane movers and all the support personnel.

We've had many notable safety accomplishments during the past two years. Most encouraging was the record 299 days in a row the command had without a Class-A flight mishap. The command also had its lowest-ever Class-A flight mishap rate in 1983—a rate of only 0.4 mishaps per 100,000 hours. In 1984 MAC's PNAF units safely and securely deployed two new weapon systems to Europe. On the home front, we've established the MAC Board President's and Mishap Investigator's Courses and the annual Nuclear Surety Conference as essential elements of MAC's mishap prevention program. The first two courses have improved both the depth and quality of mishap investigations and the Nuclear Surety Conference has filled a void in our nuclear surety program. We've also enhanced motorcycle safety with the CINCMAC-directed Motorcycle Operator Skill Test (MOST II) program, which in its first year of operation has already reduced the number of motorcycle mishaps.

When I became Director of Safety, I stated the biggest obstacles to accident prevention involved training and complacency. Unfortunately, our record in operator-related mishaps indicates we still have a long way to go in improving the effectiveness of our training programs and eliminating complacency in our operations. CINCMAC summed it up with his safety philosophy when he stated "there is no peacetime mission that justifies loss of either people or equipment through a lack of safety consciousness," and "we can operate safely and still accomplish our mission."

As I leave, I'm confident the safety program is on the right track. Command support for safety is at an all-time high, and we're achieving good results with our mishap prevention efforts. I wish you all God speed, good health and the greatest success in your future endeavors. Keep the command safe and well. Stay alive in 85.

One Time Good Deal

by Major Myron G. Ashcraft
179th Tactical Airlift Group
Mansfield Lahm Airport, Ohio

It was a bitterly cold day in January with a five-hundred foot ceiling and one mile visibility in snow. The temperature in the operations center was maybe ten degrees warmer than outside—a genuine credit to the heating system. That was the day the scheduling officer asked if I would be interested in taking a trip to Honolulu with 48 hours off in the island paradise.

"A day like this is no time to joke about 48 hours off in Hawaii," I snapped. The scheduler assured me of his honorable intentions, legitimate parentage, and inability to perpetrate cruel hoaxes. I, on the other hand, was only marginally convinced. A learned student of strategy and tactics, I had maneuvered for position. This was no time to leave the rear echelon exposed.

My suspicions were somewhat confirmed when I learned the full itinerary: One hop to the west coast; opportune cargo and space "A" pax to Hickam AFB, Hawaii; and 57 passengers back to the midwest. "Why so much time off in Hawaii?" I asked suspiciously.

"Well, in case you have any trouble getting there, you can still depart with the passengers, on time." One more look outside convinced me to throw caution to the wind. "

"Sure, I'll sacrifice for God and country. Send me to Hawaii!"

As I began preparations for the trip, I felt as if I had gotten up on the wrong side of the bed on Friday the 13th and broken the bathroom mirror with a black cat. Things were not looking good. I learned, much to my chagrin, that a January trip to Hawaii, while not impossible, can be extremely difficult for our old C-130 B-models. The absence of external tanks limited our range to just about the distance from McClellan AFB to Hickam, with no more than 40 knots of headwind. Some quick research further revealed that this was one of the worst winters in history for winds. Eighty-knot winds were common and for the past week, headwinds on the westbound tracks from McClellan had never been less than 60 knots. I was begining to understand why this trip was not being flown by lieutenant colonels. In fact, my copilot

Honorable Mention 1984 MAC Flying Safety Writing Contest

and navigator were both second lieutenants. Both were highly competent but lacked experience in overwater flying—something I felt we would need.

Another interesting fact I uncovered concerned the difference in actual fuel burn vs. charted performance. Our navigator section kept extensive records on each aircraft during overwater flights. Those records were disconcerting to say the least. Actual fuel burn for the wing's aircraft averaged five to seven percent greater than expected and—you guessed it—our aircraft exceeded charted fuel burn by a whopping 12 percent!

On the very first day of the trip we faced the first of what would turn out to be many agonizing decisions. If we went directly to the west coast the headwinds to Honolulu might be within limits the next day. Unfortunately, there was an equal chance that we would end up on the west coast waiting two or three days for acceptable winds. If we didn't get the winds there would be no macadamia nuts, no pineapples, and no pictures of Diamond Head. But there was one alternative.

"There is still a chance we can get two days off in Hawaii and accomplish the mission," I explained to the crew. "Due to the Pacific wind patterns, we may be able to fly to Alaska, then south to Hawaii—more of a crosswind than a headwind." A last minute check of actual and forecast winds was conclusive; there was no possibility of going direct. Plan "B" was implemented: Ohio direct McChord; direct Elmendorf and spend the night. Then it would be direct Hickam the next day. Our 48-hour layover would remain intact.

The trip to Alaska was a relief because we were finally on our way. The weather from McChord to Elmendorf was crystal clear; perfect for sightseeing and picture taking. Even after eight hours of flying, the scenery along the west coast of Canada was spectacular. Hundreds of miles of unspoiled wilderness—mountains, rivers, and vast stretches of coastline, all devoid of human tracks. Landing at Elmendorf, we made a quick stop at the command post and on to billeting.

The next morning the news from the weather shop was less than encouraging. An intense low pressure system was centered 800 miles southwest of Anchorage. Headwinds would be about 40-50 knots for a direct flight. The weather briefer volunteered additional information, "Accurate wind forecasts for the North Pacific are tough for C-130 flights. Few aircraft operate at the mid-altitudes (20,000-30,000 feet) and inflight updates are rare." The computer flight plan called for an immediate climb to 27,000 feet (quite high for a heavyweight C-130), long range cruise, and Barbers Point NAS for an alternate. If ever a conservative flight plan existed, this certainly was not it! Just slightly more wind or just a bit less than charted performance and we would be in B-I-G trouble.

As the aircraft commander, the decision to accept or decline the flight plan was mine. My crew and I then dissected the winds-aloft forecast. The "big picture" wind chart showed essentially the same wind pattern as the computer flight plan, with no guarantees. "Could be off 15-20 knots either way," said the briefer, reemphasizing the lack of available inflight reports. Since there was an excellent chance we would get less than charted performance from our aircraft along with the uncertainty about the winds, we elected to file the computer flight plan in the wastebasket instead of with base ops.

There remained one last chance of

Sure, I'll sacrifice ... Send me to Hawaii!

reaching Hawaii that day. A westbound flight to Adak NAS on the Aleutian chain would put us on the back side of the low pressure area. We would have tailwinds all the way to Hawaii. Once again we boarded our Herk and headed west.

Adak NAS is no garden spot. Located about 1,000 miles southwest of Anchorage on a small island, its weather is notoriously poor, and the day we landed was no exception. The forecast called for IFR conditions, but well above minimums. Considering how things had been going I should have been more suspicious. Sure

enough, as we started our descent, approach control gave us the weather: 100 feet obscured, visibility 1/16 in heavy snow—conditions not expected to improve for at least an hour. A quick check of our fuel revealed that if we held for an hour, there would be no possibility of returning to Anchorage. There are other airports closer to Adak, but Elmendorf was by far the most reliable alternate based on the forecasts. Another two turns in holding and we started back to Anchorage. More out of curiosity than having any real plan in mind, we requested the weather at Cold Bay as we flew overhead. Located about 500 miles east of Adak, Cold Bay is a refueling stop for Flying Tigers, but besides fuel and a flight service station, there is little else. While the weather was not great, it was acceptable for landing. A phone patch to Elmendorf to relay our intentions and we were soon on approach to Cold Bay. An uneventful landing, refueling, takeoff, and once again we were on our way to Honolulu.

> Something would have to happen soon or we would all be swimming

We were all a bit tired, but satisfied that we had correctly analyzed the winds, weather, and aircraft capabilities and arrived at the safest and most operationally prudent course of action. In short, we had busted our tails for two days and our reward was only six hours away. Unfortunately, our reward was about to be postponed.

My engineer was a seasoned, unflappable master sergeant who probably had more C-130 time than the rest of the crew combined. Shortly after level-off, he calmly tapped me on the shoulder and said, "I hate to bother you, sir, but the number-three engine has developed a bit of an oil leak." That was a classic understatement. Number-three was gushing oil at the rate of two gallons every 15 seconds. We caged the number-three engine, ran the clean-up checklist, retrimmed the aircraft, and evaluated our situation.

Ironically, for the first time in two days, we had plenty of fuel. We really had three choices: (1) return to Cold Bay and land; (2) proceed to Hickam AFB, Hawaii; or (3) go to Elmendorf. Cold Bay was only an hour away but offered little hope of getting the aircraft fixed or the crew fed. Continuing on to Hawaii was a consideration because it was warm, sunny, and we'd have two days on the beach while our airplane was being fixed. The thought of flying for six hours on three engines wasn't too bad, but there was always the chance a second one would fail. The last option was certainly the most prudent, but it meant that at the end of our second consecutive 16-hour crew day we would still be cold. We turned for Elmendorf.

To say the command post was unhappy to see us was the second classic understatement of the trip. The support was, however, outstanding. The next morning our aircraft was pronounced well. Unfortunately, the weather was not. The entire Aleutian chain was below minimums and the winds had not changed significantly.

"There's another way to Hickam," the command post controller volunteered. At that point we were all ears. "Kodiak is only about 250 miles south of here, but a stop there may give you just enough additional fuel to make the trip."

"Sounds good to us," I said. "See if you can pull up a computer flight plan for Kodiak to Hickam."

The flight plan arrived in what must have been record time. I gave one copy to the nav and the copilot and I started filling out the 1801. Our intention was to do all of the planning before we left Elmendorf, then get a quick turn fuel stop at Kodiak. After about 10 minutes, my nav showed up with a worried look on his face. "I don't like the route of flight," he said. "It takes us about 300 miles west of a direct route."

I explained that the computer takes into account all the winds for the route then selects the most efficient route. He was not impressed. "It takes an awful lot of wind to make up for the 250 additional miles we're adding," he argued. Back to the weather station one more time.

We requested any and all inflight reports including Navy P-3s that might be in the area. Based on all available information it did look like a direct flight would be better. I swallowed hard knowing that my career, as well as all our lives could be on the line. Not following a computer flight plan in a case where fuel is critical can be extremely hard to justify. My navigator, though young, presented a compelling and logical argument. We filed direct!

The flight to Kodiak was uneventful (if landing toward those mountains can ever be uneventful). Quick turn, tanks topped off, and a climb to 25,000 feet. Everything was fine and on schedule until about 30 minutes prior to the equal time point. Then it hit the fan as we encountered moderate to severe turbulence, light to moderate icing, and strong headwinds. Our ground speed dropped to 160, then 150 knots. It didn't take a mental giant to discern that at that rate we would be very close on fuel.

The ETP was rapidly approaching, and once past it we'd be committed. We considered reversing course and returning to Kodiak, but the weather there was dropping rapidly and would be below minimums before we could get there. We had a real dilemna.

An HF phone patch to Hickam weather was in order. Their forecast was within ten knots of the actual winds for our position, something that gave them instant credibility. They also said the winds would drop off as we approached Hickam. Somewhat reassured, we pressed on.

Past the proverbial point of no return, we agonized as the ground speed remained the same for almost an hour. Something would have to happen soon or we would all be swimming in a little over three hours. I questioned the nav, "Wasn't this place Hickam said the winds would start to drop off?"

"Yes," he said, "and as a matter of fact I believe the ground speed is starting to pick up."

We landed at Hickam with minimum fuel, almost an hour and a half behind schedule. Postflight analysis using actual wind plots and our inflight burn rate indicated that the computer flight would have been even worse.

Our 48 hours off in Hawaii was reduced to 24, but believe me we made the most of every minute. The rest of the trip was uneventful with just the mundane weather of the Midwest to contend with—low ceilings, poor visibilities, and slick runways.

Looking back at the decisions my crew and I had to make, none were easy. There was never enough information and at times there was conflicting data. This already difficult trip was made even more so because none of us had a great deal of experience in making really tough decisions. Fortunately we—the crew—were allowed to make those decisions on this trip. We now have that experience and no one can take it away. If in the future on some cold and snowy day the scheduler again has a "one time good deal," I'm sure my crew and I will be better prepared—maybe not as eager, but certainly better prepared.

Major Ashcraft graduated from pilot training at Columbus AFB in 1972. From there he went on to fly F-100s with the Ohio Air National Guard from 1973 until 1976. He then transitioned to C-130s. Major Ashcraft is a flight examiner in the Herk and a second officer for United Airlines. He holds a BS degree from Ohio State (1971), and an MBA degree from Auburn University at Montgomery (1982). Major Ashcraft graduated from Air Command and Staff College in residence (1983), and is now a flight commander in the 164 TAS.

Weather Trends in MAC Mishaps

Despite all our training to become an "all weather" Air Force, the inability to cope with adverse weather conditions still finds its way into the files as a causal factor in MAC mishaps.

- A MAC aircraft was on a low-level route when the crew found themselves in deteriorating weather conditions. Poor visibility, low ceilings and task saturation caused the crew to become disoriented. They eventually wandered off the flight-planned route and struck a mountain. All aboard were killed.
- Deviation from procedures during a precision approach in actual instrument weather conditions caused substantial damage to another MAC aircraft. The pilot flew the aircraft below decision height, where it hit the approach lights. Luckily, there were no injuries to the crew or pax.
- Everything had gone well for this crew through arrival sequencing to hand-off to precision radar. When the copilot called "decision height" and "runway in sight," the AC transitioned to visual references. Seconds later, the pilot lost sight of the runway due to fog and initiated a go-around. Unfortunately, the aircraft contacted the overrun, hit some runway lights and eventually came to rest off the side of the runway. There were no injuries.
- The crew of this helicopter was on an actual search-and-rescue operation. The AC made an instrument takeoff with the copilot monitoring outside references. Even though the anti-ice system was turned on for the climbout, the anti-ice valve for one of the engines failed to open. The engine ingested ice and lost power. About 30 seconds after initial takeoff, the helicopter crashed. All on board were injured, and the helicopter was damaged beyond economical repair.
- A MAC aircraft was descending on a routine logistics mission overseas when suddenly, it disappeared from the destination airfield's radar screens. When investigators pieced together the puzzle of why the aircraft crashed, they determined a lightning strike had been the cause of the accident.
- Although there was no "weather" to speak of around the destination airfield, the night was clear and moonless, the terrain flat and without a definite horizon, and the runway was without sophisticated approach lighting. This combination of circumstances led investigators to believe the crew became spatially disoriented during the ensuing visual approach. No one survived the crash which destroyed the aircraft.
- The crew of this MAC aircraft was flying a descending slowdown to a night personnel drop. Due to a combination of factors, including low ceilings in the vicinity of the drop zone, the crew and plane hit a mesa, killing everyone aboard.
- Finally, a MAC transport landing out of an actual PAR approach, touched down hard on this overseas runway. The aircraft suffered significant structural damage when the main landing gear failed due to overstress. Three persons aboard were injured, one seriously.

As you can see, the majority of these mishaps occurred during the takeoff or approach and landing phases of flight. Two were tactical training missions. But weather-related causes were significant factors in each one. There were literally scores of others where the only significant damage was either to one's ego or the addition of another gray hair or two. The only difference between those we've talked about here and those we didn't was the amount of damage to people or planes.

Somewhere along the way, MAC is going to suffer another weather-related mishap. But it doesn't have to happen. Thorough preparation, intensive training, personal concentration and proper motivation can keep all of us alive and well. Weather—It's killed before. Don't let it kill again!

by Val MacBlain
Operations Manager
National Weather
Teterboro, New Jersey

Clear Air Turbulence

Clear Air Turbulence (CAT) is defined as all turbulence occurring at a height greater than 15,000 ft which is not associated with convective activity or wake turbulence. This excludes turbulence caused by thunderstorms, low-level temperature inversions, thermals or local terrain features.

In its simplest sense turbulence is nothing more than a small scale variation of the velocity of air superimposed upon a prevailing flow. These variations occur in the form of either waves or vortices of various sizes.

As a river flows rapidly downstream, the river bottom and various large rocks impede the flow and cause the river to slow or temporarily change course. We see the results of this in the form of choppy water (turbulence occurring as waves), or whirlpools (turbulence occurring as vortices).

The atmosphere behaves in a similar, though invisible, manner. The earth's surface and its man-made structures affect the flow of air the same way rocks and the river bottom affect the river. At higher levels in the atmosphere where there are no visible obstructions, areas of cold and dense air form mounds which serve as "rocks," slowing the flow of less dense surrounding air and resulting in turbulence.

The tropopause and the stratosphere also have an effect. The latter is the layer above the troposphere where temperatures remain fairly constant with height. These serve as boundaries that exert a drag on the flow of air at higher altitudes in the same way the river bottom causes a drag on the river.

The perceptible effect of this turbulence upon an aircraft depends on factors such as the size, strength and distribution of the turbulent waves or vortices, as well as the size, weight, speed and design of the aircraft. CAT tends to have the least effect on large, heavy and slow moving aircraft, just as a large oceanliner will ride out a storm at sea better than a smaller, faster boat. Consider the particular type of aircraft you are flying along with its payload, fuel load and proposed airspeed when evaluating the likely consequences of encountering CAT enroute.

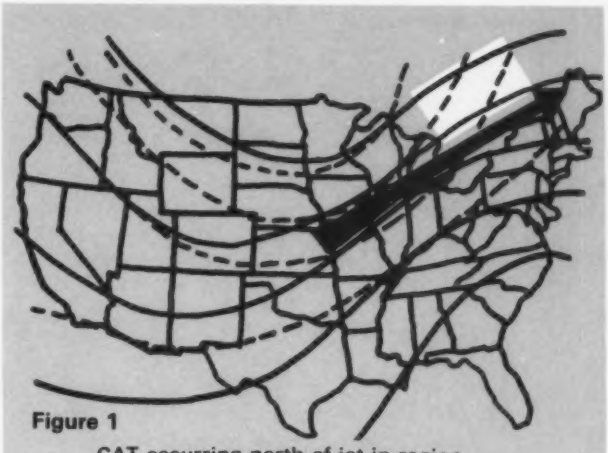


Figure 1
CAT occurring north of jet in region of thermal packing (cold advection).

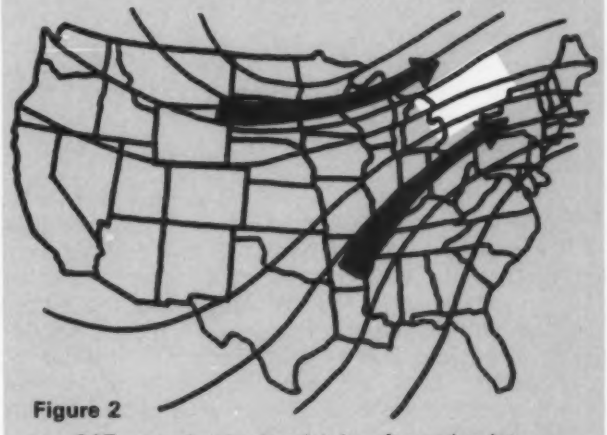


Figure 2
CAT occurring in the vicinity of merging jets.

While meteorologists have a hard time forecasting the precise time and location of CAT, they are aware of certain situations

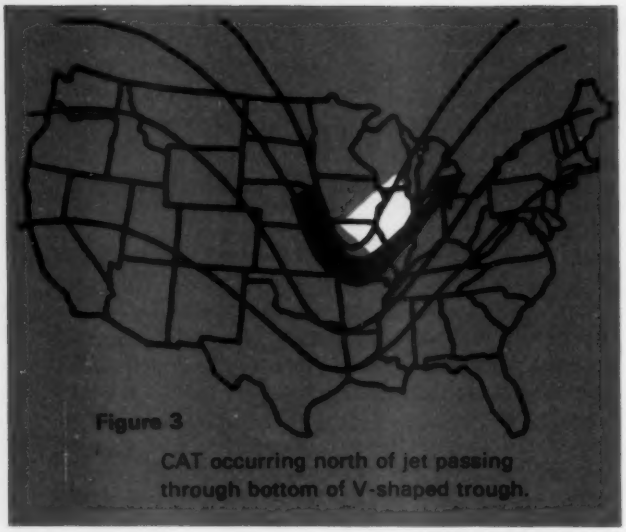


Figure 3

CAT occurring north of jet passing through bottom of V-shaped trough.

which favor its formation. CAT occurs most frequently in the winter months when the "river" of air (the jetstream) flows fastest and effects of friction on this flow are greatest. It also occurs more frequently over land, especially downwind from mountain ranges, than over water; this is due to the greater friction associated with land areas.

On a smaller scale both horizontal and vertical wind shears provide a clue to the existence of CAT. Wind shear is a change in wind velocity over a finite distance. When this change in velocity exceeds certain values, the occurrence of CAT becomes likely.

The first step in determining probable locations of CAT is to check Pireps, Sigmets, area forecasts and significant weather progs. This will alert you to areas where CAT has been recently reported or forecasted. Next study the various National Weather Service maps and make your own determination of where CAT might exist. If obtaining the briefing by phone, ask the briefer to examine the maps for you.

Such an examination should begin with the wind shear/tropopause prog chart. This shows the location of the tropopause, a likely place for CAT, and will give the vertical wind shear in knots per thousand feet. This figure represents the average vertical wind shear in a layer extending from 4,000 ft above the tropopause to 8,000 ft below. There are certain critical values of shear above which CAT is likely. When the value is 6 kts per 1,000 ft, light to moderate CAT is likely. While CAT is *possible* at lower values, it is usually not *forecasted* without some additional indication.

Figure It Out

Clues about CAT locations can also be gleaned from the upper wind map patterns. On the accompanying simplified figures, the arrow represents the location of the jetstream core, the solid lines are height contours, the dashed lines are isotherms and the shaded areas are probable locations of CAT.

As shown by Figure 1, CAT tends to occur on the polar side of the jetstream in areas where there is significant thermal advection; in other words look for CAT where the wind is blowing roughly perpendicular to the isotherms.

Where there are two separate jetstreams or branches merging, as illustrated in Figure 2, CAT can be expected in the region between the jets, from where they are 150-250 nm apart to where they merge.

One of the most common locations of CAT is on the polar side of the jet in sharp V-shaped troughs. This pattern is most frequent in winter and spring when the amplitude of ridges and troughs is greatest (Figure 3).

CAT is occasionally found in the neck (areas of convergence/divergence) of cutoff lows. This situation (Figure 4) will normally occur only when there are winds of jet speed (50 kts or greater) in the vicinity of these necks.

While CAT usually occurs on the polar side of the jet and is often associated with troughs, it can occur on the tropical side of well-curved high-pressure ridges. While the CAT in Figure 5 may be significant, it generally will not be as strong as CAT associated with troughs.

Now examine Figure 6. A rapidly developing surface low (depicted by the L) is an indication of possible CAT downwind, toward the ridge, between the location of the low and the ridge line along the jet.

CAT occasionally will occur upstream from the base of the trough, ahead of a jet moving toward an area of light winds at the base of a trough. This is illustrated in Figure 7.

Overall, the vertical distribution of CAT occurs with the greatest frequency and severity in the vicinity immediately adjacent to the tropopause, where vertical wind shears are the greatest.

You've scrutinized the charts and plotted your safest course. So what should you do when the ride suddenly gets bumpy?

First, follow the procedures for turbulence penetration found in your aircraft's Dash-One. This will reduce the severity of the effects of turbulence on the aircraft as well as its passengers, while allowing more control. Crossing the jet from the tropical to polar side or vice versa, it is sometimes wise to climb if the temperature is rising, or to descend if the temperature is falling, provided, of course, that ATC approves the altitude changes.

Remember, though, climbing too fast may result in additional stress on the aircraft. And descending may not be practical if it means encountering stronger headwinds at lower levels, causing greater fuel consumption. In any event, avoid overcontrolling the aircraft since stalling or structural damage may occur.

Since areas of CAT tend to have their longest axis parallel to the wind, a change of course to one which is perpendicular to the wind will result in a quicker penetration through the turbulent area, with a reduction in the severity of the turbulence as a bonus. Keep in mind that most CAT areas are less then 70 nm in length and are generally much narrower. By crossing the short axis, most aircraft traveling at jet speeds should spend no more than a few minutes in a turbulent patch.

Finally, when all has returned to normal, be *sure* to make that pilot report as soon as possible to alert other pilots in the area.

—Courtesy of *Professional Pilot*

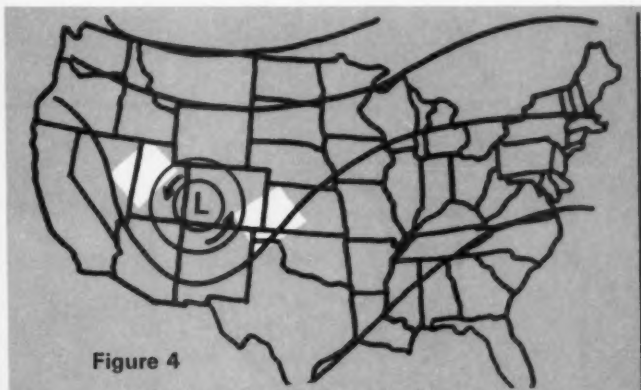


Figure 4
CAT occurring in the neck of a cutoff low.

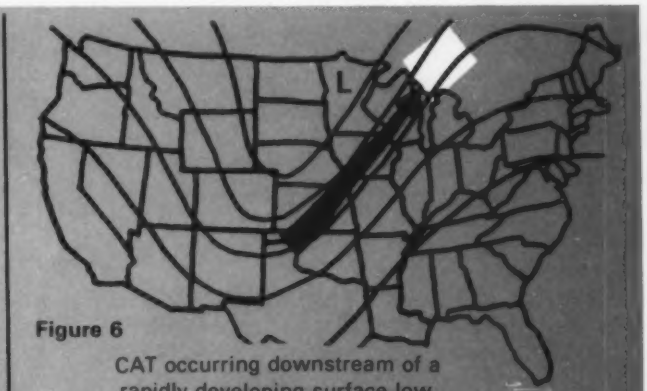


Figure 6
CAT occurring downstream of a rapidly developing surface low.

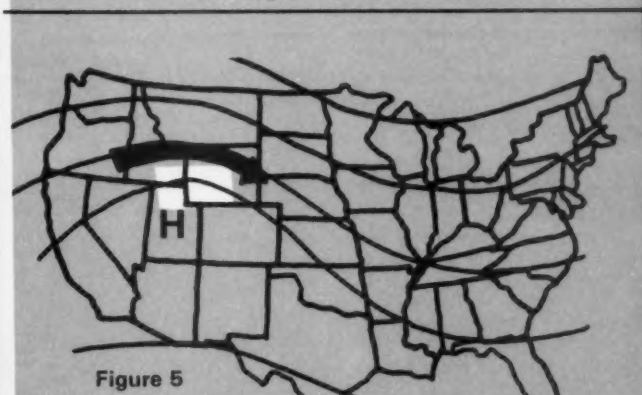


Figure 5
CAT occurring south of a jet passing over high pressure ridge.

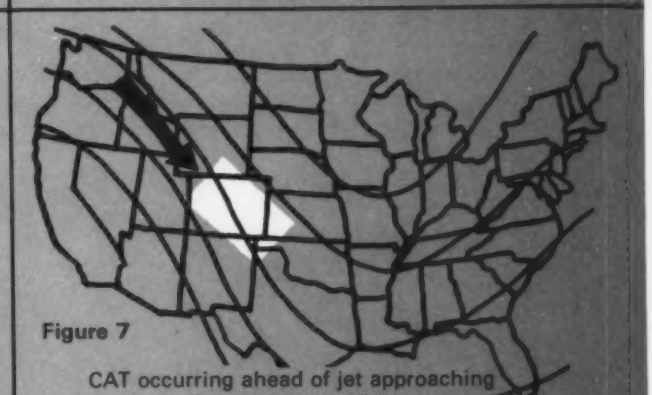
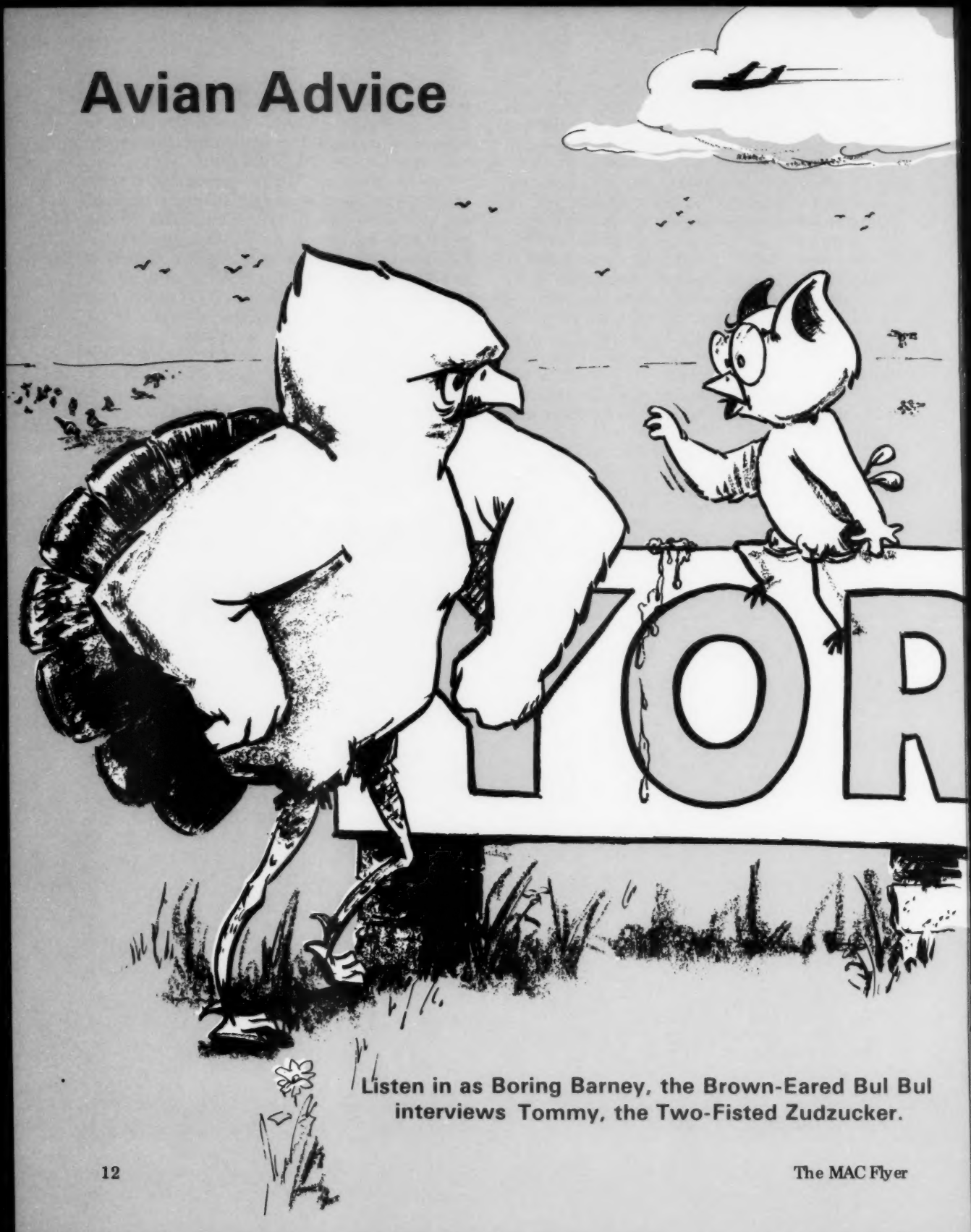


Figure 7
CAT occurring ahead of jet approaching weak gradient at bottom of trough.

Avian Advice



Listen in as Boring Barney, the Brown-Eared Bul Bul interviews Tommy, the Two-Fisted Zudzucker.

by Captain Donald L. Rosenberry
Associate Editor

Flying machines come in myriad shapes and sizes, just as birds. But unlike the feathered fliers, man's metallic clones are very predictable—from our point of view, that is. Unfortunately, this regularity of movement yields no advantage in aircraft/fowl collision avoidance. Apparently today's aircraft allow our feathered fliers insufficient lead time; they just can't alter course fast enough.

Callously, in the wake of a collision, our main concern is with the resultant damage to our vehicle. The dollar value of birdstrike-induced damage more than validates a concerted prevention effort. As to that endeavor, what *can* we "artificially aerodynamic" fliers do to eliminate or significantly reduce this hazard?

For us ornithologically uninformed aviators, addressing the birdstrike hazard is somewhat nebulous. Fortunately, some have researched the problem and developed organized, basic steps which lead to realistic solutions. These processes are necessarily generic in scope because we must tailor our efforts to local conditions.

As with any hazard, the degree of effort necessary to solve the problem is directly proportional to the degree of risk perceived. With the issue of bird congestion and associated problems, we must remember that a minor (to humans) change at a far removed location might suddenly make the home airfield a bird paradise. So whether birds are only a minor irritation or a major problem, the blueprint for a bird control or elimination program is a necessary first step in this "management opportunity."

Birds must have some reason for selecting a particular airfield. One theory suggests all the birds really want are the basic creature comforts—food, water and shelter. If your base provides none of these, read no further; this article can't help you, and we hope you enjoy the sea bottom. If, however, you are located in almost any other locale, read on.

Basically, you have two options to rid yourselves of the feathered menaces: Eliminate those items the birds find attractive; or, harass the birds until they see it your way and leave. For a hard-hitting inside story, let's listen in as Boring Barney, the Brown-Eared Bul Bul, interviews an old friend, Tommy the Two-Fisted Zudzucker, just recently arrived here at Yore AFB. The zudzucker, a rare breed of bird, displays the collective traits of a very large number of birds—given the right circumstances.

"Hey, Tommy, what brings you to this area? After all, you zudzuckers never hung around here before. You were always camping out by the fish-and-brew emporium, if memory serves me."

"Haven't you heard? They started using that monouranium cyanide preservative in the aluminum foil and it's beginning to affect the soil. Personnally, I don't have nothing against glowing feet, but the ladies ain't too keen on it, if you grab the jist . . . ."

"I see. And you imagine these environs more suitable to your needs, right?"

"Well, Barney, we're not all that pretentious. We're just after the basics, that's all. This place has some very definite plus factors. Not as good as the fish-and-brew, but that's okay."

"For the sake of my readers, could you spell out a few of your *basic* needs? Which things, specifically, helped you determine this area amicable to your lifestyles?"

"Pretty impertinent there, Barn, but I guess it won't hurt. First of all, you've got that continuous canopy created by the trees over in the replanted areas . . . ."

"Ah, yes. You refer to the trees planted close together as seedlings which intermingle as they mature. The continuous canopy thus created is ideal for shelter, food and nesting. This kind of landscaping joins shrubs, ornamental trees, shelterbelts and noise suppression barriers as good avian habitats."

"Wrong, Bacon Beak, and don't interrupt! You're describing the purpose for my Malibu condo. That leaf canopy serves as a wicked backdrop for a strobe. Then you've got all your berry producing bushes which . . ."

"Edge effects, of course. I should have remembered. Areas where vegetation changes from forest to brush, or brush to grass are very popular. They provide a variety of foods and attract myriad genera—including birds like yourself. Indeed, these

areas are havens."

"Not so quick, Nodule Nose. You really must do something about your diet, yuck! The berries serve a very real need, providing the ink to produce the tie-dyed ankle tags so popular this year. There's more, of course. Take all this standing water—critical."

"Naturally! One of our most important needs. Standing water serves as a veritable food mill, a breeding place for insects of every description, along with amphibians and other food sources."

"Wrong again, Bug Breath. As the saying goes: it's the water. A key ingredient in our quality sour mash. Fortunately, the nearby grainfields provide us with all the grain we need to keep production up. And don't buy off on any of that talk about us eating their grain. We're not health food fanatics. There's nothing like kicking back with a couple of cool 'toenail curlers' straight out of our 'starling still.' We're talking reality here!

"Is there more?"

"Now that you mention it, yes. Check out the grass around here; they keep it cropped pretty short, especially around that huge flat black area."

"They call it a runway."

"I thought it was for mass-producing worm jerky."

"I imagine the short grass affords the flock a certain security when feeding on the easily found insects and rodents. Danger signals are easily transmitted, and the seed heads are delicious."

"I'm beginning to think more than just your bones are hollow, Barney. I'm talking about the ideal location for the annual strut-'n'-crow competition. The long grass seeds make good beads for the necessary dance accessories. And the short grass? How you gonna run a respectable contest if the crowd can't see the contestants?"

"I see your point. I presume the landfill areas were also a strong point in your decision, what with all the readily available food?"

"You trash me out, boy! That human refuse is of no value to me, no sir. But just like any other civilized culture, we need a place to dump our synthetics."

"Well what about all the rodents available for . . ."

"Cheap transportation. We can live without them, but the kids think it's quite a gas to hop a ride on a field mouse."

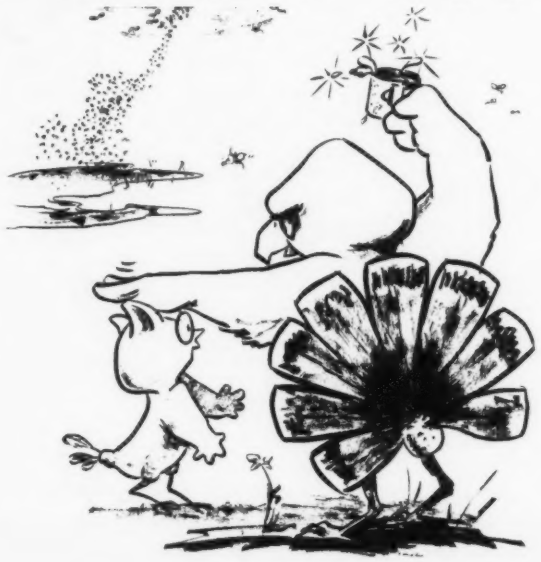
"Anything else?"

"One last perk. There are ample isolated trees scattered about."

"Good nesting for the predator in us all, eh? Trees different from those in the neighboring community make great roosts."

"I'm beginning to see why they call you 'Brown-Eared.' No, son, every man needs a little privacy once in a while, if you know what I mean."

"Well, er, ah, yeah sure. Moving right



along, are there any factors which discouraged your flocks in any way from settling in this area?"

"Well, they got this one particular breed of HB (that's human being to you) they call a Fizzo, I think. He's got all these wild ideas that are a great trouble to us." *(Editor's Note:* That's FSO—Flight Saftey Officer—to us mortals)

"For example?"

"Well, he's trying to get these funny looking carts out here that cut the grass to a frustrating 8-12 inches, too short for the beads to grow, and too long for the dance—very irritating. He also takes quite a bit of pride in yanking out all the brush and weeds where me and Sally used to go every once in a while; 'course I still had the isolated trees, for a while."

"What happened?"

"This large herd of HBs came out making an awful racket and cut off all the good limbs, they even removed some of the trees so our backdrop lets in all this light. They're virtually useless now."

"You still have the water".

"Naw, they come out and spray some powerful bad tasting stuff in the pools, even the bugs can't hack it. You can imagine what it does to the 'toenail curlers'. Rots yer beak right off!"

"That's tough. Still, I imagine these changes have been pretty slow and probably aren't permanent, right?"

"Slow, all right, but I'm afraid these kinds of changes last quite a while. Besides, even before they can get all these things done, they harass us."

"How?"

"Well, one time me and the boys were sitting around watching Slim do the limbo under this thick branch, when all of a sudden, the HBs start firing off these guns!"

"Pyrotechnics, huh? That's pretty scary."

"Yeah, it took three of us to pry Slim's beak out of that limb. Then there was the day we all flew off to the emporium for a kind of reunion. When we got back, there was bodies laying everywhere. Ghastly, I tell you. Took us more than two days to figure out they weren't real. Looked like one of those disgusting taxidermist's shops. They used a similar technique on The Sweet Spot, our favorite dive. We show up one day, and here's all these hawks, falcons, owls and even snakes! Good thing ol' Charlie's an expert at checking for synthetics at long distance, or we'd probably still be scared away from that place. It's nerve racking."

"Sounds pretty severe."

"I guess. But the worst of all was the psy ops."

"Psychological warfare?"

"Yeah, human brain. They come sneaking up real slow, as if we couldn't see 'em in that goofy looking truck with the big ears, and start playing these grisly songs of other birds dying! I was okay, then they switched over and started playing one that . . . I swear it sounded just like Aunt Martha screaming! Still chokes me up . . . A real bummer! What do you suppose drives them to these extremes? I mean, in a sense they fly just like us. Though I never could figure out why those aluminum birds have to scream the entire time."

"I don't know. So, what do you think you'll do? Stick it out?"

"For a while, but if they continue, they'll mess up all the things we thought were so attractive in the first place, and we'll have to move on. Their loss really."

"Well, thanks for taking the time to chat with me. I really appreciate another intelligent view on these important sociological matters."

"What do you mean 'another', Sponge Head?"

As you can see from this deep, revealing conversation, there are things we can do to solve our problems with birds. The most effective of these are the passive actions, which include grass height management, edge effect control, landscaping management, controlled reforestation, standing water control and pest control. Bird harassment techniques are effective, but only for a limited time. These "active controls" include the use of pyrotechnics, gas cylinders, bioacoustics, and scarecrow/model displays.

Birdstrikes constitute a considerable threat to aircraft in flight, and bird control/elimination is one key to the solution. Unfortunately, the methods are not quick or easy, so even if the bird problem is not overwhelming at your base now, you need a plan to meet the problem, should it arise. Tomorrow may bring a new challenge. Remember, the early bird gets the worm. Yummy!!!

Dear Doc

—What About OTC Drugs?

Dear Doc,

I just thought I'd drop you a line to let you know all that bunkum about self-medicating is just that—bunkum! I'm presently cruising along up here at FL290, and although I have a head cold and a runny nose, I feel just fine. You see, I just finished woofing down a couple of Kode-B-Gone time-release cold tablets with some coffee a few minutes ago, and it's really doing the trick. Along with the Beak Blaster nasal spray, I've never felt better.

Well, hate to leave you, but we'll be shooting the approach into McMac pretty soon now. Should be challenging. The weather is 200 and ½ and it's a night approach. That's funny. I've had to turn up the cockpit lighting to maximum intensity just to see the approach plate. Maybe I ought to have my eyes checked, huh? See you around, Doc, but not *too* often.

(signed)
Justin Crew-Dawg

Dear Justin,

Either you're incredibly stupid, incredibly lucky, or both. What you've just described are classic side effects of some common over-the-counter (OTC) drugs.

One of the biggest problems we flight surgeons see in the aviation community is the abuse of OTC drugs. These drugs don't require a prescription and because of that, most crewmembers think they're "safe." Thinking like that can be harmful—and may even get you *killed!* Let me illustrate my point.

Aspirin, also known as ASA or acetylsalicylic acid, is found in brand names like Bayer, Bufferin, St. Joseph's, Ecotrin, Measurin, Alka-Seltzer, Anacin, APC, Ascriptin, CAMA, Cope, Excedrin, Empirin, etc. ASA has been around in one form or another for over 100 years and, for many ailments, there is still nothing better. Most of us have used ASA for headache, fever, aching bones and muscles, flu symptoms, and "chills," among other things. In fact, most doctors will agree that aspirin is the best nonnarcotic, all purpose pain reliever around. But just like any other drug, prescription or otherwise, ASA has a few possible side effects at normal dosages.

Aspirin can cause stomach bleeding, even if you've never had an ulcer. In some persons, it can decrease your night vision; make blood clot less easily; cause drowsiness, allergic reactions, runny noses, heartburn, nausea, and vomiting. So, you think to yourself, you'll just try some Tylenol instead.

Acetaminophen is the main or only ingredient in Tylenol, Datril, Nebs, Anacin-3, Phenaphen, Tempra, Arthralgan, Parafon Forte, Percocet, etc. Just like aspirin, it can make you drowsy. Among its possible side effects are impaired concentration and impaired thinking. But worst of all, most of its side effects are insidious. They sneak up on you without you knowing it. All right, so you don't have a headache, cold, flu, sore muscles or a fever. What you have is a nasty cough from post-nasal drip, or something.

A lot of OTC cough syrups contain dextromethorphan, among them Benylin, Romilar, St. Joseph's, Cheracol-D, Dristan, Endotussin, Pertussin, Robitussin, Formula 44-D, Hold, Vicks, etc. Dextromethorphan is also a main ingredient in a lot of those little cough drops some of us eat like candy, too. Probably the worst thing about this drug is that it, too, is sneaky. It can cause drowsiness, allergic reactions, dizziness, nausea and indigestion. If you take too much, you can become euphoric, overactive, and even act as if you were intoxicated!

Guaifenesin is another common ingredient in most cough medicines and is also known as glycerol guaicolate. Like dextromethorphan, it can cause drowsiness, allergic reactions, nausea, and indigestion. All in all, OTC cough preparations are a double "no-no" for flying.

Allergies

All right, so you aren't suffering from any of the above mentioned ailments. All you have is a runny nose; probably your old allergies kicking up again. A shot of Allerest and you'll be right as rain, correct? Guess again! OTC drugs such as Allerest, Contac, 4-Way nasal spray, Sinubid, Sinutab, Triaminic, etc., are just plain dangerous to anyone who tries to fly and take them at the same time. The primary drug in these medications is phenylpropanolamine. Most of these drugs have a warning on the label that advises you not to drive while taking them. Even though it doesn't mention flying specifically, think what a capsule or two could do to you while flying a "five-hour local."

For a start, side effects from phenylpropanolamine include nervousness and insomnia. But you can also suffer headache, dizziness, rapid heart rate, nausea, and vomiting. Drugs such as these have also caused acute temporary mental derangement. At best, they just make you plain sleepy. Want more graphic proof of their lethality? Remember the young naval aviator who crashed while attempting a carrier landing at night a few years ago? The crash killed him and three other members of his crew, caused

scores of injuries and millions of dollars in damage. The autopsy showed the pilot had more than twice the amount of a drug commonly found in certain OTC decongestants normally considered safe. The drug had not been prescribed by the flight surgeon.

Alcohol

Now, most crewmembers are well aware of the "bottle-to-throttle" restrictions concerning alcohol consumption. But did you know that many OTC liquid cough medications contain alcohol—some as much as *44 percent!* That's 88 "proof" in layman's terms! Some time-honored remedies used in families for years have had alcohol as their main ingredient. All in all, it's just one more reason for crewmembers to become avid readers of labels—all labels—on all drugs.

So now you're going to tell me that to ward off the effects of all the aspirin, acetaminophen, cough syrups, and allergy medicines, not to mention the alcohol in the "cough" medications, you're going to double your coffee intake.

Caffeine is a Drug!

Okay, since you brought it up, let's talk about coffee and caffeine. Caffeine is a drug, you know. But in recent times, there has been a swing away from caffeine as an additive in soft drinks, and toward decaffeinated beverages. One soft drink brand goes so far as to tell you ". . . never had it, never will." Truth is, we get most of our caffeine in coffee, tea, chocolate, colas and other soft drinks. Caffeine is a stimulant and although not addictive, you can develop a dependence on it. If you have a heart problem or an ulcer, or if you've had these problems, you above all people should *not* partake of anything with caffeine in it. Among caffeine's side effects are nervousness, insomnia, and increased urine output. In a very dry cockpit environment, coffee is just the thing you need to further dehydrate you, especially that tenth cup during an eight-hour overwater. Not very good for the old body. Aside from those side effects, caffeine can also cause headaches, a feeling of drunkenness, impaired thinking, nausea, heartburn, indigestion, and stomach irritation.

"Unnatural" Chemicals

Okay, I'm just about finished playing devil's advocate, but let me leave you with one last thought. All drugs, no matter how harmless they seem and regardless who prescribes them—you or the flight surgeon—are chemicals. Almost none of them occur naturally within the body. They usually hang around in your system for four to six hours or more. Many have a "rebound" effect after the drug wears off. An example of this is the "low" you feel after that last cup of coffee. If you've used a decongestant nasal spray, you've probably experienced an extra stuffy nose after the effects of the decongestant wore off. In fact, rebound effects may actually be *more* dangerous than the effects of the drug itself.

And let's not forget about the effects of combining drugs. Taking several "harmless" medications at the same time might nullify or increase the effectiveness of a particular drug. Or it might cause possible side effects which neither medication taken alone would cause. Mixing unprescribed drugs with food (without knowledge of how everything interacts) can have possible dangerous reactions.

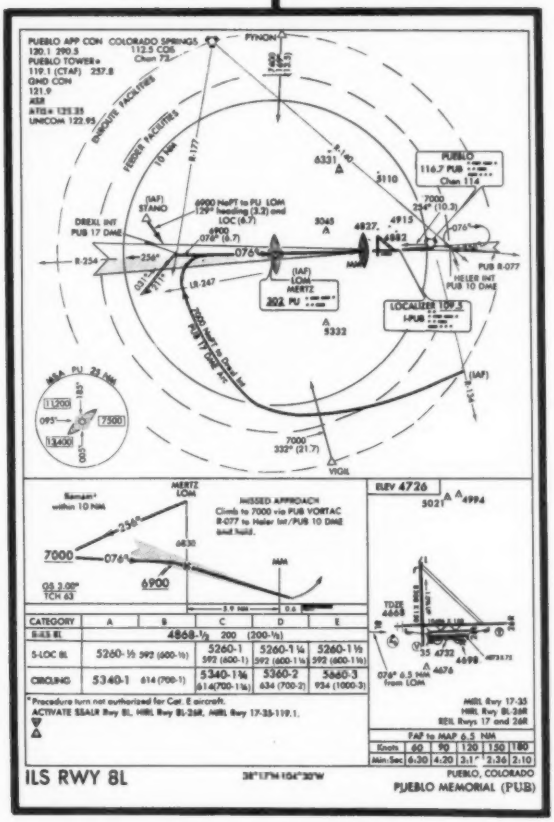
As with prescription drugs, OTC medications can have side effects that, when combined with altitude and increased "G" forces, could interfere even more with the pilot's performance in the cockpit. The last thing you need is a rapid decompression (or even a non-rapid decompression) when you have a head cold.

Remember, OTC drugs are usually taken to relieve the *symptoms* of an illness or condition, like cold or flu, for which you should have been branded DNIF in the first place. Drugs mask the symptoms—they don't "cure" you!

Responsible, mature crewmembers see the flight surgeon when they don't feel 100 percent right. The flight surgeon is qualified and trained to take care of your bod, just like you're trained to load, maintain, or otherwise operate your aircraft. So let the flight surgeon make the determination about your condition. You owe it to yourself, and you certainly owe it to the people who entrust their very lives to your safekeeping.

—Adapted from the Navy's *Approach* and FAA's *General Aviation News*

TMF Instrument Quiz


ILS RWY 8L
PUEBLO MEMORIAL (PUB)
PUEBLO, COLORADO
REV 4726
MISSED APPROACH
Climb to 7000 via PUB VORTAC R-077 to Heler Int/PUB 10 DME and hold.
FAP to MAP 6.5 NM
Knots 60 90 120 150 180
Min:Sec 6:30 4:20 3:15 2:36 2:10

You and your trusty crew were chosen (by lottery, of course) to fly into Pueblo Memorial airport and pick up a load of jalapeños for the commander's annual chili cook-off. While enroute, you, being the consummate instructor crewmember, decide a little transition work would be in order and deftly pull out the approach plate for the ILS to runway 8.

1. MERTZ is depicted as an initial approach fix (IAF). The minimum altitude at MERTZ when outbound to the procedure turn is_____.

- **a.** 7,000 feet
- **b.** 6,900 feet
- **c.** 7,500 feet
- **d.** not specified

2. The maximum authorized altitude at MERTZ when using it as the IAF is_____.

- **a.** 7,000 feet
- **b.** 6,900 feet
- **c.** 7,500 feet
- **d.** not specified

3. You cross MERTZ and begin the procedure turn. The published minimum altitude for the outbound segment of the procedure turn (procedure turn altitude) is_____.

- **a.** 7,000 feet
- **b.** 6,900 feet
- **c.** 7,500 feet
- **d.** not specified

4. You may descend below the procedure turn altitude_____.

- **a.** when within 10 nm of MERTZ
- **b.** when you have turned to intercept the course inbound
- **c.** after you are established on the inbound segment.
- **d.** both **a** and **c**

5. Arcing via the PUB 17 DME arc from the southeast to the northwest, the PUB 247 radial_____.

- **a.** is used to indentify the 10 nm distance from PU
- **b.** is used to identify DREXL
- **c.** is used as a lead radial to turn to the localizer inbound
- **d.** is of no use at all in arcing

6. The minimum published altitude on the arc is_____.

- **a.** 8,700 feet
- **b.** 7,000 feet
- **c.** 6,900 feet
- **d.** none of the above

7. The NoPT depiction on the arc means_____.

- **a.** the procedure turn must be flown once you reach PU
- **b.** the procedure turn is not to be flown unless specifically authorized by ATC
- **c.** you as the pilot may choose whether to fly the procedure turn or proceed straight in on the localizer

8. The minimum final approach fix (FAF) altitude for executing the localizer only (GS out) approach to runway 8L is_____.

a. 6,830 feet MSL
b. 6,900 feet MSL
c. 7,000 feet MSL
d. 2,162 feet AGL

9. The approximate altitude when crossing MERTZ inbound and executing the ILS to runway 8L is_____.

a. 6,830 feet MSL
b. 6,900 feet MSL
c. 7,000 feet MSL
d. 2,162 feet AGL

10. Runway 8L is _____ feet long and _____ feet wide.

a. 10,496; 150
b. 4,276; 200
c. 11,316; 150
d. 4,668; 150

The Answers

1. a. The procedure turn minimum altitude becomes the minimum IAF altitude.
2. d. No maximum altitude limit is specified or depicted, however, the maximum altitude is dictated by the performance capabilities of your aircraft.
3. a. The depicted procedure turn minimum altitude is 7,000 feet.
4. d. Once established inbound on the course and within 10 nm of MERTZ (intermediate segment), you may descend to 6,900 feet.
5. c. Lead radials are published as an advisory point for turning to intercept the final approach course and provide at least 2 nm.
6. b. Terminal routes via DME arcs are published with a minimum altitude.
7. b. The NoPT published on the arc means the procedure turn is not to be flown.
8. b. Without the glideslope, the minimum altitude at MERTZ is 6,900 feet.
9. a. The "6,830" below MERTZ in the profile view depicts the approximate MSL altitude of the glideslope at MERTZ.
10. a. The runway diagram in the lower right-hand corner gives the length and width of each runway.

In the Zone

by Captain Thomas J. Whitmire
Associate Editor

Maneuvering a 130,000 pound C-130 aircraft moving at two miles a minute into a 400 foot touchdown zone sounds difficult—and it is. In fact, it's one of the more challenging maneuvers tactical airlifters perform. The Dash-One provides guidance on what the goal is (to touch down within the zone), and it also explains why touching down in the zone within certain airspeed and sink rate parameters is essential. But when it comes to the "how" of maximum effort landings, the Dash-One gives us the freedom to pick and choose our own techniques for getting *safely* into the zone. First, let's review max effort landings according to the flight manual, then we'll discuss a few techniques for getting the machine into the zone.

A review of max effort landing procedures and techniques

Procedures

The Dash-One begins its discussion of max effort landings by advising us that we may perform the maneuver *only* when authorized or directed by our MAJCOM. It also states we'll fly a normal traffic pattern unless airfield situations or mission requirements dictate otherwise. Once established on final approach, the pilot may, at his discretion, slow to max effort threshold speed. The manual advises the pilot to adjust the descent rate to approximately 500 fpm prior to arriving over the end of the runway. The *normal* max effort touchdown zone is defined as 100 to 300 feet down from the approach end marker, but it's essential to touch down within the first 500 feet. The Dash-One emphasizes the importance of airspeed control on final approach and instructs the pilot to initiate a flare after crossing the end of the runway.

During gusty wind conditions, as with other approaches, the pilot is required to increase his approach, threshold and touchdown speeds by the full gust increment not to exceed 10 knots, all of which will naturally increase the landing ground roll. There's one other wind-related requirement to consider when planning an assault on the zone—crosswind. Unlike a normal landing where we're allowed to operate within the *recommended* or the *caution* area of the landing crosswind chart, for max effort landings, we've got to be in the *recommended* area of this chart.

Once down and *with the nose gear on the runway*, the pilot should apply full reverse thrust and use the brakes as required to stop in the available runway. Remember, max effort landings are based on the availability of *full* anti-skid braking. Occasionally, there seems to be some confusion as to what to do with the yoke after landing. During a *normal* landing, the copilot should hold forward pressure on the yoke and maintain wings level. During a *max effort* landing, however, the copilot should hold a certain amount of elevator back pressure to minimize nose gear loads plus keep the wings level.

(Editor's Note: The following information is technique *only* and should not be construed in any way as procedure.)

Aimpoint & Airspeed

A well planned, well executed approach is essential to a safe touchdown in the zone. Probably the most critical elements of the approach are aimpoint and airspeed. If the pilot doesn't control these two variables the chances of hitting the zone are greatly reduced. The aimpoint is an imaginary spot on the ground short of the touchdown zone that the pilot "aims" for during final approach. This is where the aircraft would impact the ground if the pilot made no pitch attitude change—the point will remain stationary on the windscreen once the copilot lowers full flaps and the pilot attains a constant airspeed. Early selection of 100% flaps and stablizing at threshold speed will enable the pilot to see an aimpoint which remains in the same relative position for a greater period of time during the approach.

But there are times when obtaining threshold speed early may not be wise. Instrument approaches in IMC, the anticipation of wind shear and/or gusty wind conditions are all examples of when a delayed reduction to threshold speed may be wise. Remember, however, it's pilot's discretion so use good judgment when deciding when you should slow and when you shouldn't.

The Two-Step Approach

Many pilots advocate a two-step approach to max effort landings. The two-step derives its name from the use of two separate glide paths during the approach. The first leg of the two-step begins at the initial descent on final and ends at a point short of the runway threshold. The second leg begins short of the runway threshold and continues until flare initiation. The pilot may fly the first leg as steeply as he likes, within certain restrictions which we'll discuss later. The second leg of the two-step approximates a normal glide path flown at max effort threshold speed and, of course, disregards the normal landing requirement of 50 feet over the threshold. The pilot adjusts the aimpoint for the first leg based on aircraft gross weight and wind conditions. The aimpoint for the second leg is approximately abeam the first zone marker. When deciding how steeply to fly the first leg, you must consider several things:

- First, a steep approach will help avoid small arms fire and give the pilot a better view of the runway, but may be the kiss of death in a radar environment, so consider the threat.
- Second, airspeed and power setting are critical. A torque setting below zero is ill-advised since, as you may recall, NTS action will occur at *minus* 1260 inch pounds of torque, ± 600 inch pounds. An NTS that fails may commit the propeller to feather. This happening on ½ mile final to a 3,000-foot strip is guaranteed to elevate your heart rate to aerobic levels. So, the *minimum* torque setting during the approach should be zero or slightly higher. With a heavy aircraft and a low torque setting the pilot may find himself in a monstrous sink rate so he should keep his eyes moving between the horizon and the aimpoint. If the pilot fixates on the aimpoint, he may not recognize the sink rate until it's too late to recover. The other limitation is airspeed. Once the pilot establishes threshold speed, it's essential he maintain it by adjusting pitch attitude rather than throttle position a la light aircraft. If the airspeed gets fast or slow, the 1.28 times power-off stall speed margin is in jeopardy. If the airspeed gets too low, boundary layer separation on the wing will begin as the aircraft approaches the critical angle of attack (the aircraft is approaching a stall). If the airspeed gets too high, the possibility of landing long is increased. Even if the pilot touches down within the zone but is "hot," the landing ground roll may exceed the computed ground roll. Crew assistance in backing up the pilot on sink rate and airspeed is imperative.
- Third, during a steep approach the transition to a normal glide path for the second leg of the two-step requires a larger adjustment than for a shallow approach. The steeper the approach, the greater the sink rate. If you are not comfortable with a "ya ha" approach, use something a bit shallower until you can work into the steeper approach. Know your own personal limitations and don't exceed

them.

There are two factors which govern aimpoint selection—groundspeed and gross weight—and there's no denying the connection between the two. For the sake of simplicity though, we'll take them one at a time. When landing with a tailwind (or a reduced headwind), the pilot must shift the initial aimpoint closer to the aircraft while on final. This ensures adequate time to dissipate airspeed from the threshold level to the touchdown level without landing long. Additionally, the lighter the aircraft gross weight, the closer the aimpoint must be shifted towards the aircraft while on final. This is true because a lighter aircraft dissipates energy at a slower rate than a heavy one (in other words, it's harder to slow the hummer down). Obviously, these two variables work together. For example, a lightweight aircraft landing with a tailwind can become a bear to get into the zone and therefore requires an aimpoint well short of the touchdown zone. Naturally, this is the condition most pilots find themselves in on checkride day.

There is, however, one more snake in the weeds waiting to bite the pilot flying a lightweight max effort landing. As mentioned earlier, max effort threshold speed provides a 1.28 times power-off stall speed margin during the approach—usually. As the gross weight drops below 106,000 pounds, however, the 1.28 times power-off stall speed margin begins to creep up. The reason for this is the minimum threshold and touchdown speeds dictated by the Dash-One. Below 106,000 pounds we need a threshold speed below 107 KIAS to maintain 1.28 times power-off stall speed, but we must use 107 IAW the Dash-One. The result is excess speed on final and a tendency to float through the zone to a long landing. Shifting the aimpoint closer to the aircraft on final will allow the pilot more time to dissipate excess energy and enable him to touch down in the zone and on speed.

Throttle Technique

If there's one area where the pilot doesn't want to become mechanical during a max effort landing, it's throttle technique. It's often said that it's easier to land in the zone with a heavy aircraft than with a light one. With a heavy aircraft, when the pilot's ready to touch down he makes a slight power reduction and the aircraft lands—right now! With a light aircraft, an earlier and more pronounced power reduction is needed to float the aircraft into the zone. The problem comes when the pilot is accustomed to flying a light aircraft using light-aircraft throttle technique and suddenly reverts to this habit pattern with a heavy machine. The result—a short and/or firm landing. Conversely, using heavy-aircraft throttle technique with a light aircraft will undoubtedly lead to a long landing. The training experts recognize this fact and thus require us to perform a *minimum* of 18 max effort landings each six months, of which at least six must be heavyweight (heavyweight for the E/H model is 110,000 pounds or higher and for the A model it's 96,000 pounds or higher).

Weight on the Wheels

Once on the ground and committed to remain there, the pilot should gently lower the nose and transition to nosewheel steering. Above about 50 KIAS however, the nosewheel steering is extremely sensitive and its use could result in damage to the nose gear. Therefore, at higher speeds the best way to keep the aircraft on the runway should a prop hang up is through the use of rudder, differential power and differential braking. If you start playing with the nosewheel steering at higher speeds, you're asking for trouble.

Prior to reversing, it's essential to pause momentarily in ground idle. This costs very little in terms of landing ground roll and may help identify a prop malfunction before it can cause you any bodily harm.

Max effort landings are extremely challenging and require the utmost vigilance on the part of all crewmembers to ensure safe operation. The Dash-One provides guidance on what the goal is and also explains why we need to be within certain parameters while performing the maneuver. The "how" of max effort landings is provided through various techniques which crewmembers have refined through years of practice. Even if a technique doesn't work for you, remember it. You never know when you may find a fellow flyer who might find it useful in helping him put a Herk safely into the zone.

Flying Hour Milestones

Lt Col James L. Smith, 41 MAS
Lt Col Leslie E. Smith, 20 MAS
CMSgt Troy O. Brady, 20 MAS

Lt Col Richard E. Hinkle, 335 MAS
Lt Col Thomas M. Kessler, 932 AAG
Lt Col Floyd T. Weihing, 20 MAS
Lt Col Larry A. Woodcock, 932 AAG
Lt Col Lynden E. Wordell, 335 MAS
Lt Col Paul J. Yelle, 143 TAG
Maj Howard R. Allan, 774 TAS
Maj Stanley D. Bortel, Jr., HQ MAC/DOV
Maj Joseph C. Byrum, III., 932 AAG
Maj David A. Bulger, 709 MAS
Maj Gary E. Davis, 709 MAS
Maj Francis P. Gallagher, 709 MAS
Maj John J. Gallagher, 709 MAS
Maj Lee Gidney, 301 MAS
Maj Gerald L. Holmes, 146 TAW
Maj Thomas E. Hurd, 335 MAS
Maj David L. Israel, 180 TAS
Maj Lars S. Lindenhall, 709 MAS
Maj Dennis E. Lucindo, 932 AAG
Maj Thomas G. Ritz, 335 MAS
Maj Robert A. Seitz, 932 AAG
Maj Charles L. Smith, 709 MAS
Maj James W. Schultz, 709 MAS
Maj Rudolph C. Schwartz, Jr., 932 AAG
Maj Frank E. Walters, 22 MAS
Capt Joel F. Caron, 932 AAG
Capt Samuel F. Oglesby, 335 MAS
CMSgt Randolph T. Turck, 335 MAS
MSgt Bobby L. Atkinson, 335 MAS
MSgt Cuthbert Behan, 709 MAS
MSgt Marvin L. Brannen, 22 MAS
MSgt William F. Coleman, 335 MAS
MSgt Ronald R. Dausman, 187 TAS
MSgt Charles W. Finnegan, 3 MAS
MSgt Harris W. Greene, 187 TAS
MSgt Leon W. Hipkins, 709 MAS
MSgt Arthur F. Lawshe, 335 MAS
MSgt George W. Liston, Jr., 335 MAS
MSgt John W. Martin, 22 MAS
MSgt Cyprien T. McBride, 3 MAS
MSgt Eben H. Parker, 335 MAS
MSgt Frederick R. Samer, 335 MAS
MSgt Jerry E. Slater, 335 MAS
MSgt Alex L. Smith, 1551 FTS
MSgt Stanley R. Wilbur, 143 TAG
TSgt William D. Carawan, 15 MAS
TSgt Clyde A. Joseph, Jr., 1551 FTS
TSgt Thomas B. Wong, 21 TAS

Capt Thomas P. Finnegan, 55 ARRS
Capt Roderick D. Reay, 55 ARRS

Ranks and units are those at time of award. See MACR 900-3 for details on how to apply for your own milestone award.

C.R. Terror

C.R. and the Silver-Tongued Scheduler.

C.R. Terror was irate—more accurately—livid! After all, it was a warm, sunny Saturday and he'd just been sitting Bravo alert at home. Now he'd been called out to fly.

"No sweat, Major Terror. No one *ever* gets launched off Bravo. There's absolutely *nothing* going on. Pull this Bravo for me and I'll guarantee you the *whole* Memorial Day weekend off." Recalling the snow job laid on by the young pilot scheduler the day before, the Miffed Major kicked the squadron's front door open and stormed inside.

"Captain, what the #@!!** happened to the 'no sweat, Major, no one ever gets launched off Bravo' routine you laid on me yesterday?" C.R. screamed at the young scheduler cowering behind the counter. "Not only do you ruin the first nice spring weekend of the year by calling me out to fly, but you have the audacity to call me while Tassels and I were grilling a pair of prime filets alongside the hot tub. Come out from behind that counter and I'll show you some old-fashioned field grade justice!" C.R. had fire in his eyes and murder in his heart.

"Uh, Major Terror, sir, it wasn't my idea—honest! It was those current ops guys who cooked up this mission. Really, sir, I tried my best to get the other squadron to take this mission as an add-on." Captain Sly Foxxe was not known as the Silver Tongued Scheduler for nothing. "I just briefed the ops officer, and he promised to really rattle their cage come Monday morning. You *know* Colonel Bushwhacker will straighten those guys out!" He breathed a sigh of relief as the Fuming Field Grader responded favorably to the spiel.

"You sure you discussed this with Colonel Bushwhacker?" C.R. growled. He glared at the young captain, swallowed his urge to kill, and asked the fateful question. "Where're we going and when do we get back?"

"Just a quick trip to Patrick AFB, sir," Foxxe ad libbed. "There's a load of outsized crates that NASA needs ASAP. All you gotta do is run 'em

down to Patrick and unload. Then right back. You're scheduled for a 1900 local takeoff. What with a couple of hours enroute and an hour or so to offload and file, you should be back here by midnight. That'll give you all day Sunday to soak in the hot tub and grill steaks." Foxxe was at his smooth-talking best. "I'll even take you off the local on Monday to make up for today." He smiled at C.R. disarmingly.

"Well, I guess a high-priority mission to support NASA is worth launching MAC's Most Senior Major off Bravo," C.R. grudgingly agreed, his head full of images of the upcoming shuttle launch. "Must be something real important to require my personal participation." Still mumbling, the Aspiring Astronaut wandered off in search of his crew.

"Look at the size of those crates, Sammy," C.R. exclaimed to his equally-awed copilot. "No wonder they needed us and our trusty Galaxy. Wonder why they're all marked 'Vandenberg AFB,' though."

"Probably rerouted to Patrick, Boss," Ty Downs interjected. "The paperwork Captain Foxxe handed us says Patrick. The guys at the aerial port probably didn't have time to restencil the crates." He turned away to recheck the tiedown chains as the pilots continued their long climb to the flight deck.

"Welcome aboard, Boss," Max Torque boomed as he thoughtfully assisted the winded Field Grade Fumbler onto the flight deck. "The preflight's complete, the ER is signed and we're all set to go." C.R.'s crew knew the value of being ready early. "One thing, though. We've got 175 thousand pounds of fuel on board. Command post said there wasn't time to defuel, what with all the cargo to load. They say they got us a waiver. By the way, engineers and loads are ready to run the checklist."

"Sounds real good, Max," C.R. replied, settling into the C-5's left seat and deftly fastening his seat belt and shoulder harness. "Before starting engines checklist, Sammy m'lad. We'll try to get off a little early so's we can get back in time for the Midnight Monster Movie on cable. They're showing my favorite tonight, 'Godzilla Meets Rocky.'"

Ignoring C.R.'s infatuation with the movie voted 'worst of 1981,' Sammy soon had the crew ready to start engines. "Ready to crank when you are, pilot," he remarked, hoping the Cinematic Commander would get the hint. His efforts at subtlety were fruitless, as usual. "Major Terror, are you ready for the starting engines checklist?" Plan 'B' always worked.

"No need to be impatient, Sammy. Let's take our time and do this right. Now, where were we?" C.R.'s stock reply confirmed the crew's suspicions that he'd been taking one of his infamous "combat naps."

Amazingly, only 15 minutes later the Galaxy screamed gracefully into the air, finally

airborne on its high-priority NASA mission. "Gear up," the Lockheed Legend boomed. "Call us off on the hour, Sammy."

With gear and flaps safely up, Sammy looked over at the Perspiring Pilot. "Boss, if you'll monitor departure control, I'll give command post a jingle."

Sammy was quickly back on interphone. "Boss, the duty officer says he needs to talk to you—personally." Sammy looked a little pale. "Says it's something about a reroute."

"SAY WHAT!" C.R.'s blood pressure began a meteoric rise as his ruddy complexion turned a bright, beet red. "Command post, this is MAC 90091. What's this about a reroute?" The Miffed Major never beat around the bush when his free time was involved.

"Uh, MAC 90091, this is the duty officer. We *just* got a revision to your mission set-up. Seems you're to take your cargo to Vandenberg AFB, California. You're to crew rest there, then pick up a load of test equipment for Kwajalein. After Kwaj, it's Clark, Yokota, and back to Vandenberg. After another RON at Vandenberg, it's Houston, Kennedy Space Center and back home. Captain Foxxe said the mission set-up will be waiting for you at the Vandenberg command post, and that you should be home no later than midnight local *next* Saturday. He apologizes for the recut, but says he'll discuss it with you when he returns from Squadron Officers School in late July. How do you copy?"

When C.R. had regained his ability to speak coherently, he crushed the mike button and began his much-awaited reply. "Command post, MAC 90091. Understand Vandenberg, then Kwaj, Clark, Yokota, Vandenberg again, Houston, Kennedy Space Center and home. Is that a good copy?"

"Affirmative, 90091." The duty officer was amazed, as was Captain Sly Foxxe, listening anxiously at the command post window.

"Command post, one more thing." The Acrimonious Aviator wasn't through yet. "Would you mind calling our ops officer, Colonel Bushwhacker, at home and verifying all this with him? We'd appreciate it." C.R. glanced warily around the cockpit as the hair on his neck began to stand on end.

"MAC 90091, command post." The controller seemed puzzled. "Sir, we'd be happy to call Colonel Bushwhacker, but he's on leave and won't be back for another week. Can somebody else help you?"

There was no immediate reply to his innocent question, for C.R.'s crew was deeply involved in performing a critical emergency procedure, perfected through years of practice. As the Smoldering Skipper writhed in his seat, building up a momentous head of steam in preparation for his next screaming tirade, his crew made their carefully coordinated moves. Sammy reached over and unobtrusively turned off C.R.'s radio, ensuring the Maniacal Major was completely incommunicado. Simultaneously, Ty, Max and Blinky crept slowly up to C.R.'s seat, positioning themselves with handsignals. At Sammy's nodded command, they deftly tossed a looped tiedown strap over the Ace of Apoplexy's chest and cinched it down tightly, pinning him to the chair. Working in perfect unison, they followed this by quickly strapping both of C.R.'s hands to the arms of his seat. This odious task completed, they retreated to their seats and waited.

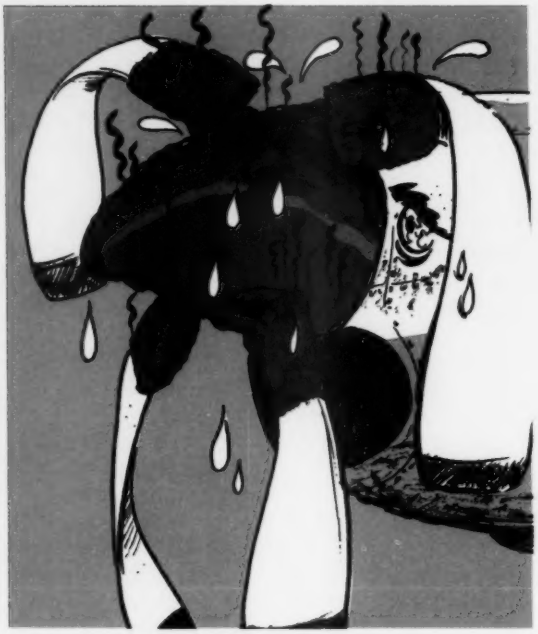
"WHAT . . . THIS IS MUTINY! RELEASE ME THIS INSTANT!" C.R.'s imprecations faded to muted mutterings as he realized he was firmly tied down. Finally, he began to cool off. "OK, guys. I promise to behave. No more blasts at the command post and no charges of mutiny." Grudgingly the Bound Buffoon realized the wisdom of his crew's actions. "I guess I should thank you for keeping me from saying or doing something I might regret later. It's just that those #@!!** schedulers keep sticking me with all these 'good deals' and I never seem to get even."

Relieved, his crew freed him from his combat strait jacket and turned on his radio.

"We know, Boss," Max chuckled. "But this time we took care of getting even *for* you." Grinning at his co-conspirators, he continued. "I wonder how long it will take Captain Foxxe to realize that those orders sending him to SOS are bogus. If I figure it right, he should be getting back from Maxwell, red face and all, about the same time we return from our little jaunt to the Pacific. Sure hope he can take a joke!"

Laughing hysterically, they gleefully turned the Galaxy westward, confident that for once, a MAC crew had gotten sweet revenge on a scheduler.

Quick Stoppers



Burning Boots

The C-130 crew had flown a site support mission and was returning to home station. After landing and finishing the appropriate checklists, the AC turned the aircraft over to the crew chief and headed back to the squadron. The crew chief remained at the aircraft for another hour, then removed all power to the Herk and departed. A few minutes later, the avionics experts were dispatched to fix the IFF and a VHF radio. After making said repairs, they too left. At 0100L another crew chief arrived to refuel the Herk, and engine personnel began an intake/exhaust inspection. During the inspection, the maintainers discovered all four propellers had damaged propeller boots. It seems that sometime during aircraft operations, the de-ice switches were inadvertently positioned "on," resulting in severe heat damage to the propeller boots on all four props requiring their replacement, at a cost of nearly $33,500.

D-Ring Hang-Ups

Following two spotter passes, the pilot of an HH-53C was preparing to drop three jumpers on this night/land deployment. The jumpmaster was configured in a tree suit and A/P 28S-17/18 parachute, and was connected to a static line running between station 402 and the right ramp snatch block fitting rig. Thirty seconds prior to the jump, the safety man reported his checks complete. The jumpmaster assumed a prone right-side position on the right-hand side of the ramp with his head and shoulders just aft of the ramp snatch block fitting. He was monitoring the reserve chute D-ring with his right hand. As he started to assume the exit position, he used his right hand for leverage on the ramp and began moving his left hand over to guard the D-ring. But before he got his left hand into position, the D-ring snagged on the ramp support cable and pulled out, deploying the pilot chute and about four feet of line. The jumpmaster fell on the reserve chute and with the help of the other jumpers, retrieved and stowed the pilot chute and line which by now had blown back into the aircraft and wrapped several times around the ramp support cable. Fortunately, there were no injuries in the incident, but no one is immune to Murphy's mischief.

Henry's Law—Revisited

After an uneventful altitude chamber ride, some crewmembers were flying back to home station as passengers on a local training flight. The flightcrew kept the cabin altitude as close to sea level as possible, in accordance with local procedures, maintaining it at 700 feet MSL or below for the 50-minute flight. While enroute, one of the crewmember pax began having trouble clearing his ears. After arrival at the destination, he began to experience temporary stomach cramping and pain in his jaw. Over the next three or four hours he also developed pain in his left shoulder. The joint pain persisted and the next morning the individual *finally* reported to the flight surgeon. He was diagnosed as having the bends and was taken to a nearby university for a chamber ride. During his three hours in the chamber, the pain disappeared. The doctors speculated that the individual may have suffered from decompression sickness due to the original chamber flight rather than from the aircraft flight to home station. However, bubbles in the blood are nothing to play with and *any* decompression sickness symptoms call for an *immediate* visit to the flight surgeon.

Dripping Drum

This particular Galaxy was at cruise altitude when one of the loadmasters noticed fumes in the cargo compartment. He notified the aircraft commander who dispatched six additional crewmembers to locate the source of the fumes, instructing them to use oxygen if required. The source of the fumes turned out to be methyl keytone leaking from a five-gallon drum located on one of the pallets. The drum was leaking from the area of the beaded seal where the side of the drum joined the bottom. Approximately 30 minutes after exposure to the fumes, four of the crewmembers experienced headaches, nausea, blurred vision, burning eyes and blueness of the extremities. After breathing 100% oxygen for a while, though, the crewmembers' symptoms disappeared. Once on the ground, a Navy doctor examined the affected crewmembers and cleared them to continue the mission.

Quick Stoppers

Slip-Sliding Away

The aircraft commander of this hardy Herk had already wisely waived the flight engineer's "Top of Airplane Inspection" due to the presence of de-icing fluid. As the pre-flight progressed, a possible aileron linkage problem surfaced which required investigation. The aircraft commander, in an effort to save time and work for the crew chief, escorted him topside through the aft overhead escape hatch. The AC managed to maintain a positive hold on the crew chief's outstretched bod, averting a fall while the chief visually inspected the linkages. Both successfully climbed back into the cargo compartment, the danger averted, but Murphy cheated again. As the crew chief exited the aircraft via the cargo ramp, he slipped on some de-icing fluid, sliding to the turf, his pride and body bruised but otherwise undamaged. The AC's laugh was still reverberating as he began exiting the ramp, careful to use the anti-skid surfaces and holding a ramp cable for increased vertical stability. The result? An even more spectacular fall. Seems the de-icing fluid has no great respect for the properties of anti-skid material, and holding the cable tightly presented just the fulcrum needed to allow the AC's feet to reach greater heights than his head. Newton's laws being unmercifully consistent, the pilot's head hit the ground first. Fortunately, he too suffered only mere flesh wounds (and embarrassment). Obviously, when the anonymous "they" told us de-icing fluid is slippery, they weren't overstating the case!

After Deadlines

LITTLE ROCK C-130 CRASHES NEAR FT. HOOD—A C-130 based at Little Rock AFB, Arkansas, crashed during a low-level training mission near Ft. Hood, Texas. Six of the eight crewmembers aboard were killed. The instructor pilot and the instructor flight engineer survived the impact and post-crash fire. The mishap is still under investigation.

LAST BEECHCRAFT C-12 DELIVERED TO ANDREWS—The 40th and final USAF C-12F began service recently with the 1402nd Military Airlift Support Squadron at Andrews AFB, Maryland. In September 1983, Aeronautical Systems Division (ASD) awarded an $86.6 million lease contract to Beech Aircraft Corp. to supply MAC with 40 aircraft for five years. The 1375th Flight Training Squadron at Scott AFB, Illinois, received the first C-12F on May 14, 1984. In a companion effort, ASD also awarded Gates Learjet Corp. a $175 million lease contract for 80 C-21As, military designation for the Learjet 35. The 80th and final C-21 is scheduled for delivery on October 29 of this year. (Courtesy AFLC LOGNEWS).

MAC CHOPPER SETS MARK—A MAC UH-1F Huey, callsign BEVER-15, recently became the first Air Force helicopter to surpass 10,000 flying hours. The Huey, belonging to Detachment 5, 37th Aerospace Rescue and Recovery Squadron, Malmstrom AFB, Montana, entered the Air Force inventory on February 10, 1966. In addition to BEVER-15's normal role of providing ballistic escort vehicle emergency response to SAC, it also flew search and rescue missions in Montana, Idaho, Canada, and Greenland. Crewmembers for the historic flight were Maj. Gen. William J. Mall, Jr., 23rd Air Force commander; Maj. Jon Huinker, Det. 5 commander; Col. Robert Parker, 341st Strategic Missile Wing commander; SrA. Arcadio Avalos, crew chief; and Mr. Bob Greer, Bell Helicopter Corp., representative. (Courtesy MAC News Service).

C-141B STARLIFTER SPR MODIFIED—According to the Directorate of Materiel Management, Warner Robbins Air Logistics Center, no subsequent problems have been reported since the completion of a safety modification to C-141B refueling lines. The modification was the result of problems caused by the separation of a 4-inch single point refueling line inside the fuselage. The modification involved a new design that eliminated a joint near the bend of a tube. Workers at WRALC added a new stainless steel insert in the couplings and additional support bracketry to allow better tubing alignment and strengthen the couplings. The new tube eliminated fuel surge vibrations that caused separation of the tube inside the fuselage. (Courtesy AFLC LOGNEWS).

USAF SURVIVAL SCHOOL WANTS YOUR STORY—The USAF Survival School wants your survival episode. If you have been involved in a survival situation, regardless of the length of time or circumstances, we would like to know about it. Send a brief synopsis of your experience in either handwritten or typed format. Include your organization and AUTOVON or commercial phone number. The instructor cadre will use your story as motivational and support material during their teaching presentations. Also let us know if we can interview you. For further information, write MSgt. Edgar, 3636 CCTW/DOV, Fairchild AFB, Washington, 99011-6024; or call him at AUTOVON 352-2371/2171.

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